

Amendments to the claims

1. (Currently Amended) A spindle assembly for a machine tool comprising:
a housing having at least one bearing;
a bearing having an inner race and an outer race disposed in said at least one bearing seat;
a sleeve disposed between one of an inner and outer races of said bearing and said bearing seat housing, bonded to said housing;
a spindle mounted on another one of the inner and outer races wherein said spindle is axially aligned relative to said bearing and said spindle and bearing are displaceable axially relative to said sleeve; and
wherein said sleeve is bonded to said housing with a metal-to-metal adhesive bonding material.
2. (Cancelled)
3. (Previously Presented) A spindle assembly according to claim 1 wherein said material is a epoxy resin adhesive.
4. (Original) A spindle assembly according to claim 1 wherein said spindle is provided with means for gripping a tool holder.
5. (Original) A spindle assembly according to claim 1 wherein said housing includes a pair of spaced bearing seats in which there are disposed a pair of axially spaced bearings.
6. (Previously Presented) A spindle assembly according to claim 1 wherein said housing is provided with an opening having an enlarged section defining said at least one bearing seat, the outer race of said bearing is disposed in said at least one bearing seat, said sleeve is disposed between said outer race of said bearing and said at least one bearing seat and is bonded to said housing and said spindle is received within said opening and journaled in the inner race of said bearing.

7. (Original) A spindle assembly according to claim 6 wherein said sleeve is bonded to said housing with a metal-to-metal adhesive bonding material.

8. (Original) A spindle assembly according to claim 6 wherein said enlarged section is provided with a annular wall, said sleeve is provided with an annular configuration, said outer bearing race is received within said annular sleeve and is bonded to said annular wall of said enlarged section of said opening.

9. (Original) A spindle assembly according to claim 6 wherein said spindle is provided with means for gripping a tool holder.

10. (Previously Presented) A spindle assembly according to claim 6 wherein said opening in said housing includes a pair of spaced, enlarged sections defining bearing seats, and the outer race of the bearing is disposed in each of said bearing seats and a sleeve is disposed between each outer race of a bearing and an adjacent annular wall of an enlarged section of said housing.

11. (Currently Amended) A method of fabricating a spindle assembly for a machine tool comprising:

forming at least one bearing seat in a housing;

mounting a spindle on one of an inner race and an outer race of a bearing;

mounting a sleeve on the other of said races of said bearing so that said bearing is displaceable axially relative to said sleeve and positioned between one of an inner and outer races of said bearing and said bearing seat;

applying an adhesive bonding material to at least one of a surface of said sleeve and a surface of said at least one bearing seat;

mounting said spindle with said bearing and sleeve, on said housing so that said surface of said sleeve is disposed adjacent to said surface of said bearing seat with said adhesive bonding material adjoining said surfaces; and

allowing said bonding material to set to rigidly secure and sleeve to said housing, permitting said bearing to displace along an axial line of travel relative to said sleeve.

12. (Previously Presented) A method according to claim 11 including forming said at least one bearing seat slightly oversized relative to said sleeve.

13 (Previously Presented) A method according to claim 12 wherein an amount of oversize is in a range between 0.010 to 0.015 inches.

14. (Previously Presented) A method according to claim 11 including press fitting said inner race onto said spindle.

15. (Previously Presented) A method according to claim 11 including:
forming first and second bearing seats in said housing;
mounting said spindle on one of an inner race and an outer race of a first bearing;
mounting a first sleeve on another one of said inner and outer races of said first bearing so that said first bearing is axially displaceable relative to said first sleeve;
applying an adhesive bonding material to at least one surface of said first sleeve and a surface of said first bearing seat;
mounting said spindle with said first bearing and first sleeve, on said housing so that said first sleeve is disposed adjacent said first bearing seat with said adhesive bonding material therebetween.
mounting a second sleeve on one of an inner and outer race of said second bearing so that said second bearing is axially displaceable relative to said second sleeve;
applying an adhesive bonding material on at least one of a surface of said second sleeve and a surface of said second bearing seat;
mounting another one of said inner and outer races of said second bearing on said spindle and said second bearing with said second sleeve in said second bearing seat with said adhesive bonding material between said second sleeve and said second bearing seat; and
allowing said adhesive bonding materials to set to rigidly secure said sleeves to said housing, permitting said bearings to displace along an axial line of travel relative to said spindle, relative to said sleeve.

16. (Previously Presented) A method of fabricating a spindle assembly for a machine tool comprising:

providing a housing having an opening therethrough with spaced, first and second enlarged sections providing outwardly facing annular seating surfaces and annular side walls;

mounting a first annular sleeve on an outer race of a first bearing so that said first bearing is axially displaceable relative to said first sleeve;

mounting said first bearing with said first sleeve disposed thereon onto a spindle having an annular seating surface so that an inner race of said first bearing seats on said annular seating surface of said spindle;

applying an adhesive bonding material on at least one of a surface of said second sleeve and a surface of said second bearing seat;

mounting said second bearing with said second sleeve disposed thereon, on said spindle disposed in said housing opening so that said second bearing is received in said second enlarged section, the outer race of said second bearing is seated on said annular surface of said second enlarged section and said second sleeve is disposed adjacent the annular side wall of said second enlarged section, with said adhesive bonding material disposed therebetween; and

allowing said adhesive bonding materials to set to rigidly secure said sleeves to said housing, permitting said spindle to displace along an axial line of travel relative to said housing.

17. (Original) A method according to Claim 16 wherein the inner races of said bearings are press fit onto said spindle.

18. (Original) A method according to Claim 16 wherein a spacer tube is provided on said spindle between the inner races of said bearings.

19. (Original) A method according to Claim 16 wherein a nut is threaded onto an end of said spindle for retaining said spindle and bearings within said housing opening.

20. (Original) A method according to Claim 16 wherein a cover plate is provided engaging the outer race of said first bearing.